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ABSTRACT

The computer services program at the University of Tennessee is described in terms of (1) goals, (2) computer services organization, (3) academic services, (4) administrative services, (5) research services, (6) public services, (7) user education, (8) coordination with outside agencies, and (9) administrative policies. The above services, activities, and policies are described in the context of major accomplishments during 1976, plans for 1978, and projected needs through 1980. (CMV)

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THE UNIVERSITY OF TENNESSEE AT CHATTANOOGA
COMPUTER SERVICES PLAN

JOHN F. TRUE
LLOYD D. DAVIS

SEPTEMBER 1, 1977

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Lloyd Dale Davis

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

IR006389

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I. GOALS

The comprehensive goal of both Academic and Administrative Computer Services at The University of Tennessee at Chattanooga is to provide competent, efficient and effective cost-allocated computer service to the total university community. This service supports administrative functions, and provides facilities necessary for the instruction and research areas of the University plus some public service needs.

To achieve this goal, computer hardware and personnel available on campus are used primarily. Additionally, the computer services of UT-Knoxville are available and extensively used. All users, irrespective of their functional areas, job type or system requirements, are accommodated according to the priorities, capabilities and policies adopted by university and campus administrative offices and by advisory committees.

II. ORGANIZATION AND OPERATIONS

ORGANIZATION AND STAFF

Since July 1, 1975, computer services at UTC have been divided into two units--Administrative and Academic. Dr. Lloyd Davis is the Director of Academic Computing and Dr. John True serves as the Director of the Computer Center.

Dr. Davis reports to the Vice Chancellor for Academic Affairs. He has one secretary and his office is charged with coordinating services for both individual faculty and academic computing user departments. A new professional position has been added to Dr. Davis' staff for FY 78.

Dr. True reports to the Vice Chancellor for Administration and his office is charged with all administrative computing in addition to maintaining the hardware for Academic Computing. Nine full-time and several part-time employees are on the staff of the Computer Center.

EXHIBIT I shows the organizational chart for FY 77.

BUDGET

The FY 77 budget for computing at UTC was divided into two categories. Academic Computing operated on a budget of $88,626 that included $37,450 in new equipment.

The U. C. Foundation provided $11,000 of the new equipment budget for a 15 megabyte disc. Title VI funds accounted for $6,450 of the new equipment budget and this amount was used to purchase DecWriter terminals. UTC provided $14,000 for a new disc and $6,000 for a new port selector.

The FY 78 budget for Academic Computing is $63,740 and reflects the addition of one full-time staff person. UTC academic departments have funds in their individual budgets for UTK computing and those amounts are not indicated in the figures above.

The budget for Administrative Computing for FY 77 was $329,826 of which $104,850 was allocated for salaries and $224,976 was for equipment and operating expenses. The FY 77 equipment budget reflects four months rental plus termination fee for the IBM 360/30, one third payment for the HP 3000, and the midyear upgrade of the HP 3000. The budget for FY 78 totals $211,193 of which $108,909 is allocated for salaries and $102,284 is for equipment and operating expenditures.

EXHIBIT II shows a comparison of the budgets for FY 77 and FY 78 in greater detail.

FACILITIES

In the fall of 1975, the HP 2000 Access was installed for the use of Academic Computing Services. The system itself consists of two processors, each with 65k bytes of memory and two 15 megabyte disc units. Adjunct equipment includes a magnetic tape drive, a paper tape unit, and console. In addition, twenty Infoton CRT's,eight DecWriters, two Tektronix graphics units, one hardcopy graphics printer, three portable terminals and two tape cassettes have been obtained. For RJE services a 300 line per minute printer and 600 card per minute reader are available. In 1975 HP donated a plotter to UTC.

Facilities added later included a third and fourth disk drive with 15 and 16 megabyte capacities respectively. A port selector with 12 incoming and 8 outgoing lines was added to increase terminal availability. Lastly, four hardcopy terminals were added.

Five computer clusters have been established. Two contain approximately nine terminals each while the other three each support 4 terminals. A typical large cluster would have five CRT's, three DecWriters, one Tektronix graphics unit and one tape cassette reader/ recorder. One cluster also contains the RJE equipment as well as four key-punches. EXHIBIT III shows the equipment utilization and EXHIBIT IV shows the locations of the clusters and the distribution of hardware.

Educational software purchased with the HP system contained an instructional management system and two authoring languages, remedial mathematics and graphics. Other materials purchased included the Huntington Two Software from DEC and all Curriculum units from HP. These units cover a wide range of subjects in Physics, Chemistry, Mathematics, Biology, History, Sociology, and Business Administration.

Administrative equipment includes a Hewlett-Packard 3000 Series II computer with 384k bytes of memory, two 47-megabyte disk drives, one 50-megabyte disk drive, two 800 bpi tape drives, one 600 LPM line printer, and one 300 CPM optical card reader.

The UTC Engineering Division has a DEC PDP 11-10 mini-computer with 16k words of memory currently installed, a graphics package supported by a BASIC compiler and 16 channels of D/A and D/D information. Peripheral equipment supporting this machine includes a dual cassette drive, a teletype, a DEC VT05 CRT, and a Hewlett-Packard 19" oscilloscope.

The Psychology Department utilizies a Honeywell H-316 mini-computer for controlling experiments and for some statistical analyses.

ADMINISTRATIVE POLICIES AND CHARGE STRUCTURE

During 1976-77 a few local policies were recommended by the UTC Computer Advisory Committee, affirmed by the Administration, and implemented by the Director of the Computer Center. Internal policies and procedures, work flow, and job accounting were also in effect during the year. University wide or campus level policies were enforced by the Director of the Center.

Computing is "free" on the HP 2000. Usage statistics are kept however, and a summary is shown in EXHIBIT III.

CPU usage is collected on the HP 3000 and a report of administrative usage for selected departments is prepared. Manpower efforts are prorated to various user departments on a percentage basis.

III. ACADEMIC SERVICES

MAJOR ACCOMPLISHMENTS DURING 1976-77

Academic Computing is available to all students and faculty who wish to utilize or otherwise upgrade their level of computer literacy. Although the Academic Center has been in operation for only two years, it has had a strong impact in the traditionally computer-orientated disciplines such as engineering and science.

More impressive is the fact that departments not normally strongly associated with computer expertise have asked for and received services. Two examples of this spread of computer knowledge are the Music Department, which has a terminal for drilling students in music rudiments, and the English Department, which has a dedicated cluster of terminals for CAI purposes.

In the College of Arts and Sciences, out of a total of twenty departments, ten (50%) presently use the computer. The same percentage is found in the College of Professional Studies and Engineering where 4 our of the 8 departments are computer-orientated.

Departments with heavy usage included Business Administration, Mathematics, Engineering, Computer Science, Psychology, Chemistry, Biology and Physics. Moderate usage was experienced in each of the departments of Economics, Education, Criminal Justice, Political Science and Sociology. Other departments, such as Music, made occasional use of

the services. There are approximately 250 full-time faculty and, of these, 95 use the Academic Computer Center.

At this point it should be emphasized that the faculty participate not only by using our facilities, but go far beyond that by being strong initiators of the new programs. Many of the faculty have devoted endless hours to writing new packages, creating management programs and revising existing programs. The only remuneration that they receive is the satisfaction of seeing the students benefiting from the new material.

There are approximately 4800 full-time equivalent students out of a student body of over 6000. Over 2700 students (or 40%) access the computer. It should be noted that a local 1975 survey indicated that 80% of those students who were majoring in Engineering, Mathematics, Psychology, Business Administration or the sciences indicated that the academic computer was of medium or heavy importance to their careers.

Of those students taking computer-orientated courses, each spends from five to 26 hours participating in the program. Additionally, many of these students spend time beyond that required and some develop their own materials.

The following courses have been selected as illustrative of academic computer services at UTC. While they are not necessarily the most important within their discipline nor the one with highest computer usage, they do indicate the diversity of computer applications.

ECONOMICS

A package containing 14 tutorials, 5 games and one simulation is used extensively in principles of Macro-Economics. The games focus on corporate financial management including topics such as the selection of marketing strategies for a new product. The games not only use computer generated mathematical models to predict rational consequences but also require the student to learn sound monetary and fiscal policies based on his or her set of values and priorities.

MATHEMATICS

A remedial Math Lab, which handles 300 students, uses the computer for paraprofessional instructional purposes. To logically support the Lab, a Data Base has been created which facilitates record keeping, maintains student progress reports and provides mastery testing.

ENGLISH

Terminals have been installed in the English Department to allow students to drill themselves in the rudiments of English Grammar. The students are assigned areas of study diagnosed as being the weakest for the individual.

This is an example of interactive computing at its best because it permits a tutorial dialogue between the student and the computer and because it is administered on a self-paced basis.

CHEMISTRY

A self paced General Chemistry course has been initiated and has been well received by students and faculty. An integral part of the project is a provision for accurately tracking student progress

including records of scores and test versions.

ENGINEERING

In this department, one of the computer applications involves computer modeling with a systems dynamic approach. A plotter and a graphics terminal are part of the system which gives the student examples of both negative and positive feedback loops from business, science and finance.

* * * * * * *

While the dissemination of computer literacy has been the major accomplishment of Academic Computer Services, other aspects have not been neglected. Specific examples which are described below relate to attainments involving increases in student enrollment and greater student efficiency.

As a result of the interactive computer addition, a new course in BASIC was added to the curriculum. Attendance is about 300 per semester now as opposed to zero two years ago. Cost of this computing averages about $1.25/hr with the average student spending 20-30 hours per semester in using the computer.

Furthermore, a larger computer science enrollment has been noted by this campus since the advent of academic computing. For example, Business Administration, Engineering, Psychology are all experiencing larger enrollments in certain classes of computer science.

The remote job entry system to the 360/65 at UT-Knoxville is open to all students, faculty and staff. Typical student jobs have a range of 1-20 minutes for FORTRAN, COBOL, PL/I and ASSIST to 2 to 4 hours for

statistical research or canned programs such as SPSS, SAS, or GPSS. The rapid turnaround of jobs has resulted in students and faculty multiplying their activity by three to five times over the situation two years ago on the slow 360/30 where turnaround was from 4 hours to 48 hours. Hence more work can be assigned in a given time. Now a student in FORTRAN will do 10 to 12 jobs in a semester as opposed to 5 to 8 before academic computing started. Furthermore, students take programming languages such as FORTRAN and COBOL with costs now of $.10 to $.25 per job as opposed to $1.00 to $3.00 before. A richer variety of accomplishments is being attained with greater speed and reduced cost than before academic computing was established.

Another factor which can be considered an accomplishment is the role Academic Computing has played in cost avoidance. The previously mentioned remedial Math Lab is a prime example of this. Math 107 is a two semester hour remedial type course which prepares students for other mathematics courses. Enrollment has increased to 300 students per semester. In the past, this would have necessitated two fulltime faculty members, but now this course is taught on a Pass/No Credit basis and is managed as a self-paced course.

This Fall, the introduction of a computer managed records system for this course means that .66 faculty will be used with a fulltime para-professional. Because of this, savings are estimated to be $8,000 or more per year while at the same time a larger enrollment is being processed.

PLANS FOR 1978

The plans for Academic Computer Services in 1977-78 can be divided into the two main categories of hardware enhancement and of software additions.

The acquisition of a port selector in FY 77 will allow UTC Academic Computer Services not only to make better use of existing computer ports but will also allow the creation of additional clusters or the adding of new terminals. More port selector capacity and terminals maybe needed in FY 78.

The greatest thrust in hardware planning will be concerned with a study to determine future needs and requirements. The success of the past two years, which gives no indication of slacking, will increase the demand for another academic computer capable of supporting 60 terminals. A capital fund campaign is underway for UTC which includes as a goal the acquisition of a second academic computer. Present plans call for the above mentioned study to be completed in FY 78 with the possibility of installing the new hardware after July 1, 1978.

Plans for ameliorating software demands are many and varied. The appointment of a fulltime programmer/analyst, which was effective July 1, 1977, will be of value in this area.

Software purchases of materials from both COMPUTE and CONDUIT as well as other sources will be completed with the expectation that 10 such packages will be installed by July 1978. For example, we are working with the English, Nursing and Home Economics departments to extend their computer literacy. In the case of the English Department,

we have installed a CAI package which will be extensively tested this fall with 500 or more students participating. Packages pertaining to Nursing and Home Economics have been obtained and are in the process of being installed.

A user manual for PSY package (programmed by a UTC faculty member) will be written. The production of general user manuals for both the local computer and for the UT-K installation will be undertaken. The Academic Computing Newsletter will continue to be published on a quarterly basis.

Of course, other materials based on faculty interests, available time, and abilities will be developed to compliment instructional needs.

PROJECTED NEEDS THROUGH 1979

Academic Computing enjoyed a very successful second year of operations. With only thirty-two ports available, students and faculty caused long waiting queues on terminals to form. Longer hours on Monday through Friday coupled with Saturday and Sunday availability have enabled many more students to utilize the system. On the other hand, faculty are increasingly adding to the computer based materials associated with their courses.

As the faculty increase their usage of CAI facilities, there will be a greater demand for software capability in the areas of programming, package conversion and documentation.

Longer hours will not totally alleviate the impact upon hardware of increased demand by faculty and students. Eventually more terminals, card keypunches and RJE stations will be needed. The new HP 3000 has helped to remedy problems caused by over-demand by supplying some off-loading. However, this causes logistical problems in that disc libraries must be duplicated or separated. Further, much of the CAI and CMI materials at this time will not run on the HP 3000 due to its paging techniques. Future releases of IMF, IDF, and CMF may resolve this dilemma. Specifically for 1978-79, another sixty-four terminals, two discs, and three keypunches will be necessary to handle the demand without serious contention problems. This will require the purchase and installation of an additional computer system and associated hardware.

IV. ADMINISTRATIVE SERVICES

MAJOR ACCOMPLISHMENTS DURING 1977

The conversion of administrative applications from the IBM 360 to the HP 3000 occupied the efforts of the Computer Center staff during 1977. The areas of Development/Alumni, Continuing Education, Parking, Business Office, and Bookstore were converted to batch operations. Other areas were completely redesigned into an interactive mode. These include Admissions, Records, Registration, and Graduate School.

The new UTC on-line registration system was brought up in seventy-five days during the fall. This rather remarkable feat was written up and presented as a paper at the 1977 College and Universities Systems Exchange Conference in Philadelphia by Dr. John True and Dr. Ray P. Fox. Several institutions from throughout the southeast visited UTC during the year to witness the performance of the HP 3000 and the on-line registration.

PLANS FOR 1978

The major thrust for FY 78 concerns the implementation of additional enhancement programs to support various administrative systems. Several new reports are planned for the Admissions Office and the Records Office. There are also plans for fine tuning and enhancing the on-line registration system.

No new hardware is planned for FY 78.

PROJECTED NEEDS THROUGH 1980

Specific future administrative needs will be based on an evaluation of the service provided during the three year pay off period for the HP 3000. Requests for additional services that may come from user departments, or potential user departments such as Housing and Physical Plant, will be evaluated by the UTC administration in terms of priorities and costs.

In terms of hardware, an additional 16-port multiplexor for the HP 3000 will probably be needed to accommodate the demand for interactive administrative computing. The addition of the remaining 128k of memory may also be cost justifiable by 1980.

V. RESEARCH SERVICES

MAJOR ACCOMPLISHMENTS DURING 1976

During 1976-77, research using the computer (primarily the UTK 360/65) was conducted by departments such as Economics, Engineering, Political Science, Psychology, Education, and Sociology on projects relating to Occupational Licensing, Energy Research, Crime Survey, First Name Conventions, Eye Color Effects, a Youth Community Attitude Survey, and a Youth Recreation Study.

PLANS FOR 1978

During 1977-78, it is expected that research using the computer will continue in about the same volume as 1976-77. Specific project titles are not generally known but will include projects similar to the above.

Resources such as RJE to the 360/65 will be required; time on the 360/65 will be approximately that utilized last year.

PROJECTED NEEDS THROUGH 1980

Research needs for 1978-80 will approximate those needs for 1976-1977 when adjusted for institutional growth. The growth of research computing will soon require that a policy concerning consultation for researchers be developed.

VI. PUBLIC SERVICES

MAJOR ACCOMPLISHMENTS DURING 1977

In conjunction with the CE Department, Academic Computer Services has offered, over the past year, a number of evening adult classes including two in computer literacy, one in computer science, and several teacher workshops. We have presented a Saturday morning seminar for gifted children in grades 4 through 7. Our facilities have been chartered as a computer Explorer Post by the Boy Scourts. The Academic Center has been used for workshops regionally given by Criminal Justic in support of LEAA.

Demonstrations of academic computing have been given at regional and local high schools, and at community events. Services on an 'as needed' basis are provided to alumni and interested partons.

While our institution has not provided data processing services per se for local government, we have been highly involved in community activities. An example of this was a project commissioned by the Greater Chattanooga Area Chamber of Commerce. This project consisted of surveying 1600 local youths regarding their attitudes towards living and working in this area. Their answers were computer analyzed and compiled into a 'Youth Attitude Survey'.

Another example of community outreach is a 'Youth Recreational Survey' conducted under the aegis of the Metropolitan Youth Council. The objective of this survey was the production of a report which tabulated the career and hobby activities of 1300 eleventh graders.

This summer some 30 junior high school students are attending a course funded by the National Science Foundation and taught by two of

our faculty. This course, which introduces the students to the world modelling system developed by Dr. Forrester of MIT, utilizes the resources of our computer facilities.

PLANS FOR 1978

Workshops for public school will continue to be conducted during the next year. Goals for these workshops include both an increased awareness of the potentials for computing in the public schools as well as an appreciation of the capabilities of UTC Academic Computer Services for college bound students. Several continuing education courses will be offered again during the year.

Currently, we are exploring the possibility of working with Chattanooga Adult Education Council to develop CAI (Computer Aided Instruction) sessions for those adults in the community who are desirous of upgrading their reading skills.

Various tours, demonstrations, speeches will comprise the bulk of Public Services for 1977. In addition, where possible Academic Computing will consult with users with regard to the methodology of combining statistics, data reduction, and the computer. These activities will, of necessity, be limited to those situations where public service is appropriate.

Requests for computing services for public service will be handled within the guidelines provided in the UTC Public Service Computing Policy.

PROJECTED NEEDS THROUGH 1980

The Public Service needs through 1980 probably will be of the same kind and quality as mentioned earlier.

VII. USER EDUCATION

MAJOR ACCOMPLISHMENTS DURING 1977

In the area of faculty user education the Computer Services staff provided assistance to users concerning the use of the TP Facility to the 360/65.

Expertise has been fostered by 'in house' workshops for interested faculty. An average of 10 workshops such as the following were conducted last year:

(1) Instructional seminars of 6 weeks duration on the use of BASIC were given to the faculties of Science, Engineering, Mathematics, Human Services, Business Administration and Economics.

(2) Campus wide seminars on IDA (Interactive Data Analysis) and SPSS (Statistical Package for the Social Sciences) were offered to users.

(3) Video tapes produced by UTK on SPSS were obtained for a seminar on this subject.

An Academic Users Committee consisting of one member from each academic department provides communications and "feedback" between academic departments and the Office of Academic Computing Services (see EXHIBIT VI).

In the area of student users, accomplishments cover a wide range, from providing fundamental instruction in the use of terminals through to sophisticated computer science courses. This range has been covered extensively in Section III.

PLANS FOR 1977

The seven video tapes on JCL and the five tapes on SPSS for the UTK IBM 360/65 will continue to be available.

Administrative users will be involved in learning to use the HP 3000 and in planning future enhancements of administrative computing.

The resources of the academic HP 2000 will continue to be available to faculty and students. New and/or interested faculty will be given the opportunity to learn about the resources provided in the Academic Computer Center through a series of workshops. A short course in BASIC will also be offered and other topics will be covered as requests arise.

PROJECT NEEDS THROUGH 1979

The User Education needs for 1978-79 will probably be of the same kind, quality, and volume as mentioned above.

VII. COORDINATION WITH OUTSIDE AGENCIES

MAJOR ACCOMPLISHMENTS DURING 1976

During the past year, three local colleges and two private high schools as well as the Hamilton County School System have occasionally utilized our facilities. Reciprocal arrangements have been established with these institutions with one of the primary goals being to create high visibility both for UTC and for its Academic Computer Services through demonstrations.

Relationships have been established with other institutions using the HP 2000 and with software swapping groups. As an example of the former, we have offered workshops to members of local educational institutions as well as to other Hewlett-Packard users in the southeast. UTC hosted a conference of HP educational users which resulted in the establishment of a regular meeting schedule. (See EXHIBIT VIII - HP Educational Users Conference).

An Academic Computing Newsletter, published quarterly, is available without charge to all UTC faculty users and is sent at cost to those outside the campus who have requested it.

The UTC Academic Computer Services addresses computer impact on society by offering special programs to teachers, community organizations and interested adults besides being actively involved in community projects which require computer support.

UTC actively cooperates with local data professional groups such as ACM (Association for Computing Machinery) and DPMA (Data Processing Management Association) besides participating in regional and national meetings of CONDUIT and CCUC (Conference on Computers in

Undergraduate Curriculum). In addition, faculty attend national professional conferences of NAUCAL (National Association for Users of Computer Aided Learning), AED (Association for Educational Data Systems), ADCIS (Association for Development of Computer Based Instruction Systems), and NCECS (North Carolina Education Computer Services).

Throughout the year local newspapers and TV stations have covered news-worthy items connected with Academic Computer Services, such as the publication of the Youth Attitude Survey and the establishment of an Explorer Scout Post.

PLANS FOR 1977

UTC will continue to serve as an emergency back-up service for area users where proper cost recovery arrangements can be made.

Academic computing will be taken into the public school classrooms for demonstrations.

PROJECTED NEEDS FOR 1980

Co-ordination with outside agencies will continue to increase through to 1980.

IX. ADMINISTRATIVE POLICIES

MAJOR ACCOMPLISHMENTS DURING 1977

In 1975 a proposal was submitted to University of Chattanooga Foundation which subsequently funded the major cost of opening and maintaining the office of Academic Computer Services for the year 1975-76. Inherent in the design of the proposal was the concept that computer literacy would be supported by "free" computing. Academic Computer Services, therefore, are "free" in the sense that UTC directly supports all instructional computing with no money transfer from users to Academic Computing.

PLANS FOR 1978

Free computing for users of the HP 2000 will continue. Funds for UTK computing will be placed in departmental budgets for FY 78 so that user departments will be aware of actual changes.

An in-house (no transfer voucher) system of job accounting will be developed and implemented for the HP 3000.

Some attention will have to be given to developing a policy for providing consultants for research workers.

PROJECTED NEEDS FOR 1979

As computing continues to grow at UTC, future policies will have to be developed concerning the use of limited resources.

UTC COMPUTER SERVICES
ORGANIZATION CHART
1976-77

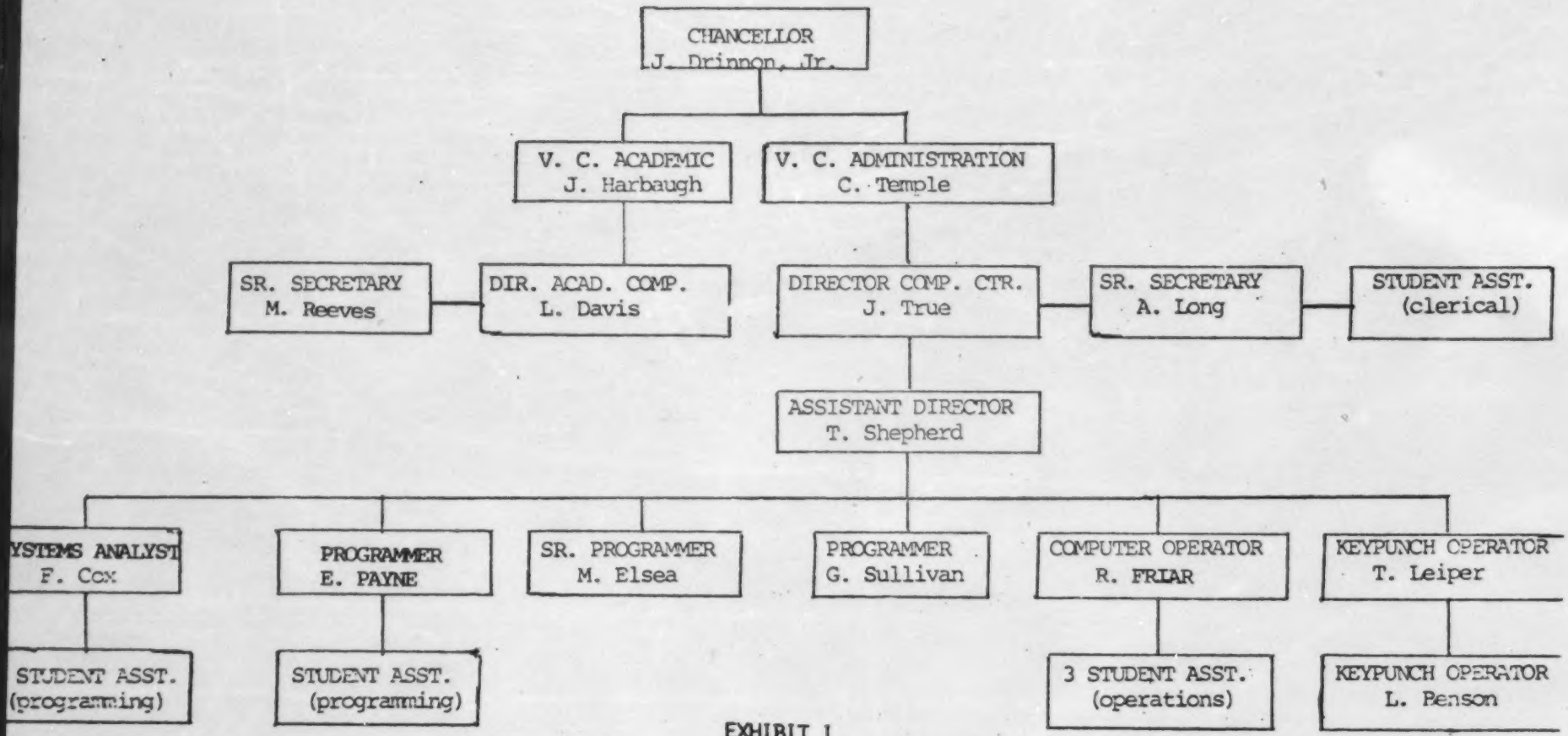

EXHIBIT I

EXHIBIT II

UTC COMPUTER SERVICES

BUDGETS FOR FY 77 & 78

	ADMINISTRATIVE		ACADEMIC	
SALARIES	FY 77	FY 78	FY 77	FY 78
PROFESSIONAL	$47,960	$51,150	$14,867	$25,278
CLERICAL & SUPPORTING	56,890	57,759	5,779	6,166
TOTAL SALARIES	$104,850	$108,909	$20,646	$31,444
EQUIPMENT				
COMPUTING EQUIPMENT	$184,807*	$63,677	$37,450**	0
OTHER (KEYPUNCH, ETC.)	2,890	1,000	1,920	1,920
	$187,697	$64,677	$39,370	$1,920
OPERATING EXPENSE				
INCLUDING MAINTENANCE, SUPPLIES, WAGES, ETC.	$37,279	$37,607	$28,610	$30,376***
TOTAL BUDGET	$329,826	$211,193	$88,626	$63,740

* REFLECTS 4 MONTHS RENTAL PLUS TERMINATION FEE FOR 360/30 AND ACQUISITION AND ONE THIRD TOTAL PAYMENT FOR HP 3000. ALSO INCLUDES HP 3000 MIDYEAR UPGRADE.

** ONE 7905 DISC, ONE 7920 DISC, ONE PORT SELECTOR.

*** UTC ACADEMIC DEPARTMENTS HAVE FUNDS FOR OBJECT CODE 381 (UTK COMPUTING) IN THEIR INDIVIDUAL BUDGETS AND THOSE AMOUNTS ARE NOT SHOWN HERE.

EXHIBIT III

UTC Academic Computer Utilization

	HP 2000		IBM 360/65 UTK	
	1975-76	1976-77	1975-76	1976-77
Month	Hours	Hours	Jobs	Jobs
July	-	2582	1672	601
August	-	3008	333	285
Sept.	-	4438	2079	2140
Oct.	1053	6225	3617	2245
Nov.	1201	4858	2248	3247
Dec.	1848	2327	1355	1437
Jan.	4131	4698	744	1498
Feb.	3033	3507	2837	2720
March	2268	3482	3212	2844
April	2705	3443	5237	4402
May	2848	2855	1985	1785
June	2971	2671	1787	921
Total	22058	44094	27106	24125

Note: HP 2000 averaged 17.8 hours per terminal per week during FY 76 compared to 26.5 hours per terminal per week during FY 77.

EXHIBIT IV

ACADEMIC COMPUTING SERVICES - SCHEDULE OF FACILITIES

ROOM	FACILITIES	HOURS FALL 1977
HUNTER 208	6 CRT's (1 CASETTE) 3 DECWRITERS 2 GRAPHIC	8:00 AM - 9:00 PM MONDAY - THURSDAY 8:00 AM - 7:30 PM FRIDAY 9:00 AM - 1:00 PM SATURDAY CLOSED SUNDAY
GROTE 226	5 CRT's (1 CASETTE) 3 DECWRITERS (1 PLOTTER) 1 GRAPHIC	8:00 AM - 7:00 PM MONDAY - THURSDAY 8:00 AM - 5:00 PM FRIDAY CLOSED SATURDAY AND SUNDAY
HOLT 101	4 CRT's	8:00 AM - 5:00 PM MONDAY - FRIDAY CLOSED SATURDAY AND SUNDAY
LIBRARY 2ND FLOOR	4 CRT's	7:50 AM - 10:00 PM MONDAY - THURSDAY 7:50 AM - 5:30 PM FRIDAY 9:00 AM - 5:00 PM SATURDAY 2:00 - 10:00 PM SUNDAY
HOOPER 250	2 CRT's 2 DECWRITERS	8:00 AM - 7:00 PM MONDAY - THURSDAY 8:00 AM - 5:00 PM FRIDAY CLOSED SATURDAY AND SUNDAY

EXHIBIT V

DISTRIBUTION OF HP 2000 ACCOUNTS BY DEPARTMENT

DEPARTMENT/GROUP	NUMBER OF ACCOUNTS ISSUED	
	1975-1976	1976-1977
Behavioral Sciences	360*	340*
Biology	30*	130*
Business	249*	370*
Computer Science	455	624
Economics	51	61*
Engineering	279	305
General Science	60*	200*
Home Economics	0	20
Mathematics	275*	375
Music	0	60
Nursing	0	25
Office Administration	20	0
Political Science	30	60
Physics	150*	30
Other Students	92	102
Faculty Members	75	95
	2126	2797

* All classes estimated at 25 - 30 students each.

EXHIBIT VI

ACADEMIC COMPUTER USERS COMMITTEE MEMBERS
(1976-77)

DEPARTMENT	NAME
BIOLOGY	DR. CHARLES NELSON
BUSINESS ADMINISTRATION & ECONOMICS	DR. LEILA PRATT
CHEMISTRY	DR. JOHN LYNCH
COMPUTER SCIENCE	DR. LLOYD DAVIS
DRAMA & SPEECH	DR. DAVID WILEY
EDUCATION	DR. THOMAS HOPKINS
ENGINEERING	DR. WAYNE HILSON
ENGLISH	DR. CHARLES TOTTEN
FOREIGN LANGUAGES	DR. PEDRO CAMPA
GEOLOGY & GEOGRAPHY	DR. NORMAN KING
HEALTH & PHYSICAL EDUCATION	REP. BY SCHOOL OF EDUCATION
HISTORY	DR. JAMES WARD
HUMAN SERVICES	MRS. LINDA MYERS
MATH	DR. CLINTON SMULLEN
MILITARY SCIENCE	MAJOR FRANK STONE
MUSIC	DR. PETER TEMKO
NURSING	DR. MARJORIE SCZEKAN
PHILOSOPHY & RELIGION	DR. THOR HALL
PHYSICS	DR. ERIC LANE
POLITICAL SCIENCE	DR. DAVID BRODSKY
PSYCHOLOGY	DR. MICHAEL BIDERMAN
SOCIOLOGY	DR. LELAND ROBINSON
SPECIAL STUDIES	MISS FRAN BENDER

EXHIBIT VII

UTC COMPUTER ADVISORY COMMITTEE MEMBERS

1976 - 77

DR. MICHAEL BIDERMAN (CHAIRMAN)
ASSISTANT PROFESSOR OF PSYCHOLOGY

DR. TERRANCE CARNEY
ASSOCIATE PROFESSOR OF ENGINEERING

MR. JIM BLACKBURN
DIRECTOR OF ADMISSIONS

MRS. BRENDA DAVIS
DIRECTOR OF REGISTRATION

DR. LLOYD DAVIS
DIRECTOR OF ACADEMIC COMPUTING SERVICES

DR. RAY FOX
DEAN OF ADMISSIONS AND RECORDS

DR. CHARLES NELSON
ASSOCIATE PROFESSOR OF BIOLOGY

DR. LEILA PRATT
ECONOMICS

DR. IAN STURROCK
DIRECTOR OF DEVELOPMENT

MR. ALAN WINGER
DIRECTOR OF FINANCE

PLUS TWO STUDENT REPRESENTATIVES RECOMMENDED BY SGA

EX-OFFICIO MEMBERS

DR. JANE HARBAUGH
VICE CHANCELLOR FOR ACADEMIC AFFAIRS

MR. DAVID LARSON
VICE CHANCELLOR FOR FINANCE

DR. CHARLES TEMPLE
VICE CHANCELLOR FOR ADMINISTRATION

DR. JOHN TRUE
DIRECTOR OF ADMINISTRATIVE COMPUTER CENTER

EXHIBIT VIII

HEWLETT-PACKARD EDUCATIONAL USERS GROUP MEETING

(SOUTHEASTERN REGION)

Signal Mountain Room

University Center

University of Tennessee at Chattanooga

25 July 77

SUMMARY OF ACTIVITIES

UTC ACADEMIC COMPUTER CENTER - Dr. Lloyd Davis

The center was originally funded by a grant from the UTC Foundation. At present, it has an operating budget of $45,000 annually.

The Center utilizes a Hewlett-Packard Model 2000 Access system with supporting equipment, to which will be added a 7920 Disk Drive.

The most important recent development is the introduction of a CAI English package which is a remedial adjunct to a course in Rhetoric and Composition.

HEWLETT-PACKARD NEW PRODUCTS - Jack Clark

HP is getting into "big time" with regard to the computer industry. It is placing emphasis on selling systems, especially those academically-orientated.

HP is introducing a 2648A Graphics terminal which will be compatible with the 2645 unit. New features of the 2648A are:

a) Automatic Ploting allowing 'off line' data to be plotted into graphs

b) "Zoom" capability permitting displays to be magnified up to 16 times

c) Independent memory stage

d) Text composition which provides for labelling graphs without affecting memory

e) A "rubber band line" feature which uses a special cursor to draw extra lines

f) Rectangular area shading utilizing a specified user pattern

HP has committed itself to educational users; the company will introduce new training programs and staff to emphasize its operation in this area. The commitment to the HP2000 is still firm though there will be no enhancements for the 2000; eventually it is hoped to replace these units with the 3000 series.

HEWLETT-PACKARD SERVICE - P. Carter

A form titled 'Quality of Service Report' has been designed to provide HP with a feed-back from the user. Each user is asked to send in one or two of these a year. HP hopes to have a service person in the Chattanooga area later this year.

A user suggested that HP issue a Newsletter containing information and warning users of problems that have been identified.

Dr. John True distributed copies of a handout listing 35 problem areas connected with the HP3000.

WORLD MODELLING - Dr. C. Smullen

The National Science Foundation Summer Science Program at UTC utilizes computer modelling with a system dynamics approach. This allows a positive and negative feed-back of business, science, and financial loops.

Forrester, at MIT, developed a urban dynamics model and later progressed to the production of a world model, the latest version of which is Limits to Growth.

The world modelling system utilizes a multiple loop feed and covers five areas including population and natural resources. This system works well on the HP3000, and the models can be used for informed decision making, taking into account that today's obvious answers are not necessarily correct.

MUSIC HARMONY - Dr. P. Temko

The Music Department has one terminal which it will use for IDF tutorials and for a drill series developed by the University of Iowa. These CAI packages are ideal for drilling students in the rudiments. By next year, it is hoped to make the CAI drills mandatary in the first semester unless the student scores highly in a quiz.

There is a IDF package for brass instruction. Other activities, such as music synthesis, because they involve complex analysis skills would require the instructor to have a computer background.

KEY-IN-WORD-CONTEXT - Dr. Clay Ross

Dr. Clay provided a handout for this package, which has the calling name KWIC. KWIC is principally an editing package which allows texts to be edited and to be analysed into a comparative vocabulary listing. Unique and common word occurrences are indicated. If there are many occurrences of a word, the package will give the location in sequence.

Besides English texts, KWIC can be used for ones written in German, French, Spanish or Medieval English.

REMOTE JOB ENTRY (RJE) - Ray Robinson

This package, written by a UTC student for the HP2000, permits the student to interactively create his own FORTRAN program and then add or delete statements. In addition, RJE takes keywords and operands being added to an existing program and puts them out in FORTRAN. Unlike most other edit packages which allocate one scratch file for each user, RJE needs only one file. (256 words).

Since UTK requires a 'crunch' card to precede a remote job, RJE has been constructed to produce its own 'crunch' card.

Another advantage of RJE is that it allows Computer Science students to bypass the card reader and send their program to UTK from any terminal.

MACRO ECONOMICS - Dr. L. Pratt

UTC has based its Macro-Economics package on one produced by University of Wisconsin-LaCrosse. The questions are drawn from a universally used Economics text book.

The package contains 14 tutorials, 5 games and one simulation. The games, which supplement the tutorials, require the student to use his or her knowledge of macro-economics to solve problems on monetary and fiscal policies. Two of the games which focus on scarcity of resources, require the students to develop their own priorities and values. The third game, which is very complicated, is used primarily for intermediate or MBA students.

In the spring 1978 semester, one set of Macro-Economics will be taught using the CAI tutorials. All students taking Macro-Economics this fall will be tested before and after taking the course. The results will be compared against similar tests given to students in the experimental set.

Dr. Pratt reported that she is developing a Micro-Economics package which will include tutorials, a simulation based on Forrester's world model and games requiring a team of students.

MATHEMATICS MANAGEMENT - Dr. R. Detmer and Dr. C. Smullen

Drs. Detmer and Smullen discussed a Remedial Math program which they developed and which uses the Image 3000 Data Base.

By fall '77 semester, a Math Lab will be established for remedial purposes. It will have 24 testing booths, a discussion area and two terminals (one DEC writer, one CRT). It is expected that 300 students, in 2 day courses and one night course, will utilize this facility. Each student will be working at a different level so a management program, written in FORTRAN and using the HP3000 Data Base has been developed. This program permits a proctor to register each student at the appropiate level and maintain accurate records of his or her progress.

FIRST LAW OF THERMO DYNAMICS - Dr. E. Lane

The UTC package is a revised version of a CONDUIT unit from North Carolina. It consists of a tutorial series on the first law of thermo-dynamics. The student is tested on the gas laws and elementary physics. To permit greater latitude, the program was revised to allow freshmen students to ask for help and receive explanations of the terms.

TEXT EDITOR - Dr. E. Lane

The text editor, a 30 record program, was developed by Dr. Lane. When a student indicates that he requires help this is provided on one of three levels. An instruction manual describing the levels is available.

There is an ALTER command which allows editing of any part of the string. The editor is handled by an ASCII file and can create or purge a file within ED2000 itself.

CHEMISTRY - Dr. J. Lynch

CAI is used within the department to familiarize the faculty with available programs, to educate the students, to offer special self-pacing courses in General Chemistry and to present workshops to high school teachers.

About 30% of the students in that course use CAI for Analytical Chemistry and have found it particularily useful for drilling purposes.

The University of Michigan made up the questions for a self-pacing course now being used at UTC. Last fall, about 50 students signed up for the course. Their activity and test scores were recorded - in the first two weeks 40 students logged 4300 minutes of CAI.

High School teachers were given demonstrations of the CAI programs.

BIOLOGY - Dr. R. Garth

One member of the Biology faculty has catalogued all Biology books and magazine articles available in the UTC library. In addition, he has identified all slides available within the department. All of these records are stored in the HP2000 system.

Dr. Garth, using a handout, showed how CAI was used to teach taxonomy to freshmen. Using the computer, the students were able in 10 minutes to find the relationship and evolutionary links between 12 species - a job that would normally take 6 hours when done manually.

In the future, a self-paced Biology course may be introduced.

STATISTICS - Dr. M. Biderman

The work done by Dr. Biderman is dependent on two other packages- IDA (Interactive Data Analysis), which handles business statistics, and GUS (a set of socialogical analyses). Dr. Biderman wrote PSY as a complimentary third package.

PSY, developed to handle psychology statistics, has several valuable attributes. It is highly "forgiving", allowing minor errors made by the student to be overlooked. It is highly interactive and does not require a manual. It permits the student to ask for either advanced or elementary work levels and provides help if this is requested.

A handout showing printouts of PSY was distributed.

PLOTTING - J. Williams

Mr. Williams, who is a UTC student, has developed general programs to change data into a graph output. His programs can produce semi-log and log-log graphs, can plot linear axes and can plot data on an X and a Y axis. A numerical file editor program will edit a file for numbers while a "curve fitter" program will fit a curve to inputed data.

A printout showing the plotting programs and the options available was distributed.

ON LINE REGISTRATION - Dr. John True, Dr. Ray Fox

In the fall of 1976, a HP3000 was installed in the UTC Administrative Computer Center. A system, called STARS (Student Terminal Assisted Registration System) was programmed and made available for Spring 1977 Registration.

Using this system, each student is registered for his or her courses by an operator who uses a CRT terminal. This gives instant feed-back on the status of the request. If the requested class is available, the student is registered. If the class is full, the student is given the opporunity to apply for an alternate time. As each student completes his registration, his course schedule is printed and a copy is given to him.

The meeting was adjourned by Dr. John True who announced that Birmingham Southern College had agreed to be the host for the next meeting to be held in January 1978.

Following the meeting, the conferees were invited to tour the UTC Administrative Computer Center with its HP2000 and HP3000 configuration and/or watch demonstrations of packages described during the meeting.

Roster of Those Attending Southeastern
Hewlett-Packard Educational Users Group Meeting
The University of Tennessee at Chattanooga
July 15, 1977

	Name	Institution
1.	Garland A. Borden	Tuskegee Institute
2.	Fred Stone	Hewlett-Packard
3.	Janine Huff	NCECS-North Carolina
4.	Jeff Kell	UTC
5.	Tony Shepherd	UTC
6.	Jeff Caldwell	UTC
7.	Bob Wadley	Union University, Jackson, Tennessee
8.	Morris K. Lynch	Union University, Jackson, Tennessee
9.	Doug Sizemore	Covenant College
10.	Beth Craig	UTC
11.	Lloyd Davis	UTC
12.	Eric Lane	UTC Physics Department
13.	Ray Robinson, Jr.	UTC
14.	Don Caskey	Marist School, Atlanta
15.	Jim Williams	UTC
16.	Leila J. Pratt	UTC
17.	Clay Ross	The University of the South
18.	Norman Love	Maryville College
19.	Jodie Kirk	UTC
20.	Marcia Clarkson	The University of the South
21.	Malcom Owen	The University of the South
22.	Bill Truex	Union University, Jackson
23.	Mike Biderman	UTC
24.	Bill Parks	Walters State Community College, Morristown
25.	Eddie Little, Jr.	Walters State Community College, Morristown
26.	Don Gholson	Walters State Community College, Morristown

Roster-Southeastern Hewlett-Packard Educational Users Group Meeting

27.	Jack Clarke	Hewlett-Packard
28.	Pam Barker	Hewlett-Packard
29.	Phil Carter	Hewlett-Packard
30.	Tim Morgan	Vanderbilt
31.	P. Temko	UTC
32.	Edward Payne	UTC
33.	R. S. Cunningham	Birmingham Southern College
34.	Carol Smith	Birmingham Southern College
35.	Lewis Patterson	Birmingham Southern College
36.	John True	UTC
37.	Clinton Smullen	UTC
38.	Richard Detmer	UTC
39.	Terry Carney	UTC
40.	Laurel Carney	G.P.S.